

# Claims

[c1]

1.A system for providing a communication data link, comprising:

(A)a base unit, having a modulator and a demodulator;

(B)an extension unit, having a modulator and a demodulator; and

(C)a power line communication channel connecting said base unit with said extension unit.

[c2]

2.A system for providing a communication data link, as recited in claim 1, wherein said modulator of said base unit further comprises:

(1)an encryptor;

(2)an encoder electrically connected to said encryptor;

(3)an interleaver electrically connected to said encoder;

(4)a differential encoder electrically connected to said interleaver;

(5)a channel mapper electrically connected to said differential encoder;

(6)a specific modulator electrically connected to said channel mapper;

(7)an upsampler and filter electrically connected to said specific modulator;

(8)an upconverter electrically connected to said upsampler and filter;

(9)a D/A converter electrically connected to said upconverter;

(10)a power coupler electrically connected to said D/A converter; and

(11)a connector connecting said power coupler to said AC power line.

[c3]

3.A system for providing a communication data link, as recited in claim 1, wherein said modulator of said extension unit further comprises:

- (1)an encryptor;
- (2)an encoder electrically connected to said encryptor;
- (3)an interleaver electrically connected to said encoder;
- (4)a differential encoder electrically connected to said interleaver;
- (5)a channel mapper electrically connected to said differential encoder;
- (6)a specific modulator electrically connected to said channel mapper;
- (7)an upsampler and filter electrically connected to said specific modulator;
- (8)an upconverter electrically connected to said upsampler and filter;
- (9)a D/A converter electrically connected to said upconverter;
- (10)a power coupler electrically connected to said D/A converter; and
- (11)a connector connecting said power coupler to said AC power line.

[c4]

4.A system for providing a communication data link, as recited in claim 1, wherein said demodulator of said base unit further comprises:

- (1)a power line coupler electrically connected to said AC power line;
- (2)an A/D converter electrically connected to said power line coupler;
- (3)an IF to baseband converter electrically connected to said A/D converter;
- (4)a down sampler electrically connected to said IF to baseband converter;
- (5)specific demodulator electrically connected to said down sampler;
- (6)a channel demapper electrically connected to said specific demodulator;
- (7)differential decoder electrically connected to said channel demapper;

(8)a decoder electrically connected to said differential decoder; and

(9)a decryptor electrically connected to said decoder.

[c5]

5.A system for providing a communication data link, as recited in claim 1, wherein said demodulator of said extension unit further comprises:

(1)a power line coupler electrically connected to said AC power line;

(2)an A/D converter electrically connected to said power line coupler;

(3)an IF to baseband converter electrically connected to said A/D converter;

(4)a down sampler electrically connected to said IF to baseband converter;

(5)specific demodulator electrically connected to said down sampler;

(6)a channel demapper electrically connected to said specific demodulator;

(7)differential decoder electrically connected to said channel demapper;

(8)a decoder electrically connected to said differential decoder; and

(9)a decryptor electrically connected to said decoder.